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VASQUEZ BLVD. AND I-70 SITE

Draft Problem Definition and Risk Management Objectives

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Purpose of This Document

This document is intended to define the problem of potential concern at the Vasquez Blvd. and I-70 (VBI70) site in Denver, Colorado, and to identify risk management objectives that have been developed to guide the risk assessment being conducted by EPA for the site.

Problem Definition

The problem of potential concern at this site is contamination of environmental media (soil, groundwater, surface water) with chemicals (metals) associated with current and former activities at three smelters (Globe, Omaha and Grant, Argo) which operated in the area of the site. This environmental contamination is of concern because of the possibility that past, current, or future exposure might be causing adverse health effects in exposed humans and/or in ecological receptors.

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Risk Management Objectives

Risk management objectives are qualitative statements of purpose that are intended to help focus the efforts of the remedial investigation and risk assessment so that issues of concern to the risk managers and the citizens are properly investigated and evaluated. The risk management objectives identify the key questions which the risk manager feels should be investigated. The risk management objectives are not intended to replace scientific judgement in the remedial investigation or risk assessment, nor are they intended to prejudge the outcome of these studies, but to provide a frame of reference for judging which areas of investigation and analysis are of greatest importance and relevance to the risk manager and the community.

The draft objectives at this site have been developed by risk managers for the site, taking the input of concerned parties into account in a working group forum. These objectives are based on the current conceptual model for the site, which is shown in Figure 1. This site model summarizes what is currently understood about how humans in the area may be exposed to smelter-related contaminants. This conceptual model and the risk management objectives may be refined and improved as more information becomes available at the site regarding the nature and extent of contamination, and the magnitude of the potential human health risk posed by the contamination.

VASQUEZ BLVD. AND I-70 SITE

Draft Risk Management Objectives

General

1. Ensure the protection of human health and the environment from contaminants associated with current and former smelters located in the vicinity of the site.
2. Assure that all evaluations and all decisions are scientifically sound and are based on the best available scientific information.
3. Assure that state-of-the-art QA/QC and methods are used for all activities related to the site investigation, the risk assessment, and any appropriate remedial actions.
4. Assure decisions and processes are consistent with:
 - EPA regulations, guidance, and policy, including environmental justice. EPA will document their specific efforts to treat this site as an environmental justice site.
 - State regulations, guidance, and policy.
 - Local regulations, guidance, and policy.
5. Assure that ATSDR is fully involved throughout the process. Assure agreement between ATSDR, EPA, and CDPHE on risk assessment methods, to the greatest extent possible.

Remedial Investigation Objectives

Collect sufficient information and data to properly characterize the nature and extent of smelter-related contamination at residential and commercial properties at the site.

Human Health Risk Assessment Objectives

Provide area residents with information on the potential adverse effects (both cancer and non-cancer) of excess exposure to arsenic, cadmium, lead and zinc. This information should be written in language understandable by average citizens, and should be available in both English and Spanish.

Identify locations within the site boundaries that have concentrations of arsenic, cadmium, lead, or zinc in soil or related media which result in predicted doses to people that exceed the most appropriate criterion for protection against non-cancer health effects. Relevant criteria for non-cancer effects include EPA's Reference Dose (RfD) and Reference Concentration (RfC) values,

and ATSDR's Minimal Risk Levels (MRLs)¹.

Clean up all property (inside and outside) to meet ATSDR's minimal risk levels (MRLs) for arsenic, cadmium, lead, and zinc².

Estimate the cumulative cancer risk to area residents from cadmium, arsenic, lead, and zinc in site soils and related media. Identify locations that are predicted to fall within or exceed EPA's reference range for excess cancer risk. This reference range is from one in a million (1E-06) to one in ten thousand (1E-04).

Collect data to help determine if predicted exposures and risks to exposed populations (residents, visitors, workers) are accurate and realistic. This could include a variety of studies such as:

- Biomonitoring for exposure to lead and arsenic
- Epidemiological studies to evaluate whether the incidence of any adverse effects expected to be associated with exposure to site-related chemicals (e.g., cancer, developmental effects, asthma, kidney disease) is higher in the study area than in other comparable areas. (Note: such studies would be the responsibility of ATSDR).
- Studies on the chemical and physical nature of the contaminants, and the rate and extent of the absorption by humans.

Evaluate soil exposure pathways, including both indoors and outdoors, and both direct and indirect routes. Pathways to consider include:

- Pets bringing in dirt from outside (there is a large percentage of pets in the area)
- Direct contact with soil in crawl spaces
- Dust from the crawl space being re-circulated through the heating system
- Inhalation of dust from traffic
- Exposures of children (going barefoot, direct contact with soil, etc) in empty lots, along railroad tracks, unpaved alleys, old buildings, yards, etc.; collect information from area residents to identify places where children play
- Lots and dirt roads owned by Union Pacific Railroad
- Ingestion of home-grown produce grown in contaminated soil (98% of residents in Clayton and Cole have gardens or fruit trees; 30-40% in Swansea/Elyria)

¹ Note: for arsenic and zinc, ATSDR oral MRL values and EPA oral RfD values are the same. For cadmium, the values are very similar. For lead, EPA has not established an oral RfD and ATSDR has not established an oral MRL.

² This objective is included at the request of a community representative. EPA notes that the final selection of an appropriate clean up level is made when a remedy is selected based on the criteria established in the National Contingency Plan.

- Potential exposures near the Old Finance Center at 38th and York; there is a lot of illness in that area
- Construction site by the Coliseum (near site of old Omaha-Grant Smelter); may be turning over contaminated dirt. There is a lot of construction in the area which tends to bring contamination from below the surface to the surface
- Potential exposure to commercial/industrial workers, utility workers, etc., who would have direct and extensive contact with soils through excavation activities.

Determine if groundwater and surface water meets applicable standards.

Assure protection of sensitive groups (children, seniors). This includes children in daycare centers and children staying with extended families.

Consider and characterize cumulative risks from E.J. sources (e.g., mobile sources, current industry, night-time odors)

Ecological Risk Assessment Objectives

Assure sustainable ecology in aquatic and riparian systems on site.

Remedial Action Considerations

Break any soil exposure pathways that pose unacceptable risk

Prevent usage of contaminated groundwater, and remediate, to the extent feasible, groundwater that is above appropriate guidelines or standards.

Perform investigations and risk assessments prior to changes in zoning or permitting new industry.

Clean up activities will minimize potential for re-contamination. All non-residential property (including alleys and street and road construction or traffic dust) that contain unacceptable levels of contamination will be cleaned such that no adverse health effects occur as a result of the cleanup.

Work toward full understanding of and agreement on the Feasibility Study, by assuring that it meets all of our needs.

Identify individuals who may need health intervention associated with exposure to environmental contaminants (prior to, during, and after clean up).

For any chemicals that are left in place following the completion of the RI/FS and remedial action, ensure that adequate protective and enforceable institutional controls are in place, as appropriate.

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